**Isopod Behavior, or The RollyPolly Lab**

**Objectives:**

Observe various aspects of a terrestrial isopod

conduct experiments examining the responses of isopods to various environmental factors

design and conduct an investigation of animal behavior

Isopod Handling and Rearing

Raise isopods in a clear shoebox or similar, the bottom should be covered with soil or sand and kept moist (use a mister). An old piece of bark, and leaf litter covering the soil. Isopods can be fed carrots, raw pototoes or apples (alternately fish flakes can be used as food). Moldy food or soil should be removed. Females can carry up to 200 eggs in a brood pouch underneath her abdomen and will remain in the pouch for about three weeks - they look the same as adults, only smaller.

Larger isopods can be handled and observed easily with your hand, by picking them up with your fingers or gently scooping them up with a spoon. They are fast walkers and can withstand short drops. Immature isopods are more fragile than adults.

\*\*Isopods are also called sowbugs and pillbugs.

Background Information

Terrestrial ispods are land dwelling crustaceans, commonly known as sowbugs or pillbugs (or rollypollys). They are related to lobsters, crabs, and shrimp and terrestrial isopods breath with gills. While they look similar, sow bugs are different from pill bugs. Pill bugs will curl into a ball when threatened whereas sow bugs will attempt to flee.

Ethology is the study of animal behavior. Many behaviors involve movement of the animal within its environment. In this exercise, you will investigate some innate (instincts) behaviors of isopods.

**Isopod Observations**

In the first part of this exercise, you will observe pillbugs and record what you see.

Analysis (include in lab report)

How do the pillbugs seem to sense their environment?

Are they all the same species?

Can you tell the difference in males and females?

How many eyes do they have?

How many legs do they have?

Do they exhibit dominance behaviors?

How do they respire?

What are some stimuli they seem to respond to?

**Scientific Sketching**

When you make a sketch of a pillbug, don't just draw an oval with a few squiggly legs - you are expected to do a scientific illustration that describes the looks, size, and unique features of the pillbug.

Here are some tips for making an accurate sketch (include in your lab report)

Determine the relative proportions (length, width, height as well as lengths of body parts)

Count the number of body segments

Count the number of legs

Locate and label the body parts

Note the size of the pillbug

**EXPERIMENTAL DESIGN:**

For the experiments you design, you will need to create a chamber to test the isopods reactions. Each basic chamber will consist of two sides, each side having a different environment

**Part A - Orientation of Isopods in Response to Moisture**

Procedure: Set up your behavior chamber so that you have one side moist and one side dry (using paper towels). Transfer 5 isopods to each side of the chamber (total of 10). Count and record the number of animals on each side of the chamber every 30 seconds for ten minutes, using a table like the one below.

Time # in Wet # in Dry Other Notes

0:00

0:30

1:00

1:30

**Part B - Student Designed Experiment**

Select TWO of the following factors to investigate and design an experiment to test it. You may also propose your own test, check with your instructor.

*Factor: Possible Materials*

Temperature: Cold pack, warm pack, ice, warm water

Light: Lamps, flashlights, dark construction paper, aluminum foil

pH: vinegar, baking soda

Subtrate (surface): Soil, gravel

Food: Potato, fish flakes

Begin with a hypothesis, often written as an IF-THEN statement (include in your lab report)

Poor: I think pillbugs will move toward the wet side of a choice chamber.

Better: If pillbugs prefer a moist environment, then when they are placed in a wet/dry choice chamber and allowed to move about freely for 10 minutes, most will be found on the wet side.